

CAB-O-SIL[®] DIVISION

CABOT

CABOT CORPORATION

P. O. BOX 188, TUSCOLA, ILLINOIS 61953

TELEPHONE AREA CODE 217
TUSCOLA 253-3370
TELEX TUSCOLA 910-663-2342

December 30, 1974

Mr. William H. Busch
Manager Permit Section
Division of Water Pollution Control
Illinois Environmental Protection Agency
Springfield, ILL 62706

1475
RECEIVED

JAN - 6 1975

ENVIRONMENTAL PROTECTION AGENCY
DIV. OF WATER POLLUTION CONTROL
RECORDS UNIT - SPRINGFIELD
STATE OF ILLINOIS

Dear Mr. Busch,

Cabot Corp. - Second Disposal Well
Log #1423-74

The following information is submitted in answer to the six specific points raised in your letter of November 7, 1974.

EPA Question 1) Available data on water quality for the region suggest that the ground water in the Silurian-Devonian interval probably will not exceed 10,000 ppm. Some rural residences and the Village of Tuscola obtain their water supplies from this interval several miles to the east.

Answer 1) Our study of the local geology indicates that the Devonian and Silurian rocks are found immediately below the glacial drift to the east of the Tuscola area. However, beginning at a point about a mile to the east of the city of Tuscola these sediments dip sharply to the west at a rate of better than 500 feet per mile, resulting in the top of the Devonian being found at a depth of 2450 feet below the surface in the No. 1 Cabot well. At this depth the formation waters can normally be expected to be more highly mineralized, and such is found to be the case. A water sample was collected from the underlying Silurian prior to setting intermediate casing in the No. 1 U.S.I. well, immediately to the northwest of the Cabot plant site. Total dissolved minerals in this sample of Silurian water was reported by the Illinois State Water Survey (Laboratory No. 181681) as 14,160 mg./l., which is well in excess of the 10,000 ppm potable limit.

EPA Region 5 Records Ctr.



298935

EPA Question 2) The packer setting for the swab test of the disposal zone has not been identified.

Answer 2) In order to swab test the disposal interval, the packer will be set at about 4950', immediately above the 7-inch casing seat.

EPA Question 3) Formation tops and names should be updated on the well schematic and in the text of proposal. The elevation of tops taken from geophysical logs should be corrected for differences in surface elevations and the distance between the measuring position and ground level.

Answer 3) A more complete elevation drawing of the proposed well completion is attached. Depths of the local formations are listed beside the geologic column. For convenience, these depths are shown subsea as well as subsurface.

Specifically, on a subsurface basis, the formation tops are as follows.

		<u>Ft.</u>
Glacial Drift		- 200 Approx.
Pennsylvania		-1330
Mississippi	Begin	-1449
	St. Genevieve	-2348
Devonian	Cedar Valley	-2446
	Geneva	-2516
Silurian		-2609
Ordovician	Maguoketa	-3148
	Trenton (Galena)	-3360
	Shakapee	-4107
	Oneonta	-4562
Cambrian	Eminence	-4809
	Potosi (Trempealeau)	-5002
	Franconia	-5264
	Galesville	-5304
	Eau Claire	-5324

EPA Question 4) The types of cement for grouting have not been identified. The acidic character of the waste may require special cement at the base of the 7" casing.

Answer 4) The types of cement to be used behind each of the casing strings are shown on the enclosed elevation drawing. It should also be noted that the proposed well will have almost 200 feet of oil seal below the casing seat as a secondary defense against acid erosion in this portion of the hole.

EPA Question 5) The well location relative to an established survey marker has not been given. The proximity of the proposed well to the existing well as the locations are shown on the plant plot plan may cause excessive interference.

Answer 5) The proposed well location scales 510 feet south and 229 feet east of the No. 1 well location. Using the identical reference for the No. 1 well, the proposed No. 2 well will be located 1235 feet north and 571 feet west of the SE corner of SE/4, SW/4, SE/4, Section 31, T-16N, R-8E, Douglas County. This location places the No. 2 well approximately 560 feet SSE of the No. 1 well.

Pressure interference between the proposed and existing wells is not believed to be a problem because the wells are planned to be used alternately and not simultaneously. The lack of pressure buildup seen in the No. 1 well while injecting at maximum rates indicates the effective permeability of the injection zone, for all practical purposes, is infinite. Under these conditions, even if the two wells were used simultaneously, the interference between them would be of a very low order of magnitude. This fact would be true no matter how closely the wells were spaced.

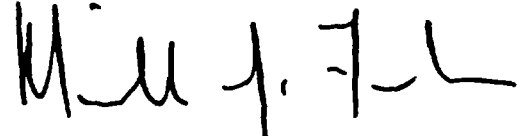
EPA Question 6) Three swab test samples of formation water are to be collected according to item B-3, but the position for only two of these samples is identified.

Answer 6) Item B-3 was poorly worded. It is supposed to indicate that the water recovered from each of these two formation tests should be divided into three separate bottles to be absolutely certain of having backup samples.

We ask that you regard this letter as our request to reactivate the permit application and that as such it be considered effective the date of receipt at the Agency.

Very truly yours,

CABOT CORPORATION

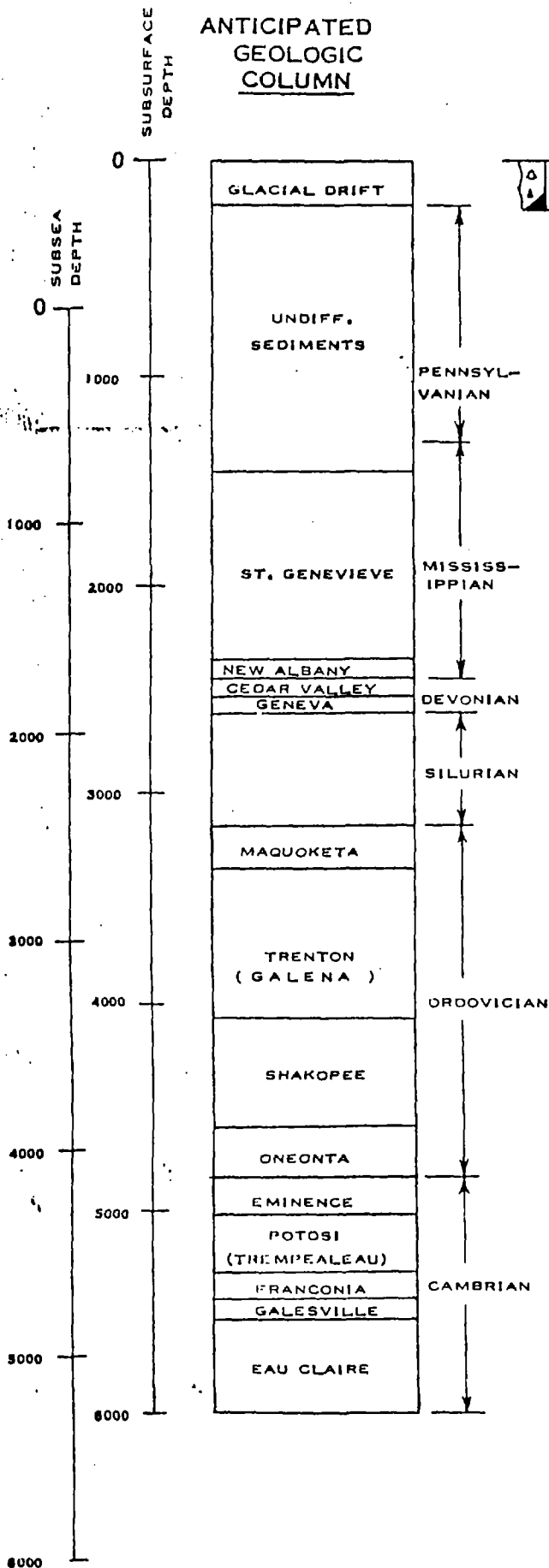
A handwritten signature in black ink, appearing to read "M. G. Fowler", written over the printed name.

Michael G. Fowler
Manufacturing Manager

ir

PROPOSED WELL COMPLETION

ANTICIPATED GEOLOGIC COLUMN



GROUND LEVEL ELEV. 690'

17 1/2" HOLE DRILLED TO 225'
15 1/2" 40# CASING SET AND
CEMENTED TO SURFACE WITH
COMMON PORTLAND (API CLASS A)
CONTAINING 8% BENTONITE.

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ENVIRONMENTAL PROTECTION AGENCY
DIV. OF WATER POLLUTION CONTROL
RECORDS UNIT - SPRINGFIELD
STATE OF ILLINOIS

12 1/2" HOLE DRILLED TO 2615'. DRILL
STEM TEST TO BE RUN TO INSURE THIS
DEPTH IS BELOW 10,000 PPM FORMATION
WATER TOTAL SOLIDS CONTENT. 9 1/2"
36# CASING SET AND CEMENTED TO
SURFACE WITH 50-50 POZMIX OILWELL
CEMENT.

CASING - TUBING ANNULUS FILLED WITH OIL

8 3/4" HOLE DRILLED TO 5005'. 7" 23# CASING SET
AND CEMENTED TO SURFACE WITH 50-50 POZMIX.
LOWER 1000' OF SLURRY TO CONTAIN 4.5 GAL/SACK
OF ALCO RESIN FOR RESISTANCE AGAINST ACID
ATTACK.

3.9" I. D. 3# FIBERCAST CHEMICAL DISPOSAL
TUBING LANDED AT 5200'

6 1/2" HOLE
TOTAL DEPTH 5500'

CABOT CORPORATION

PROPOSED COMPLETION AND GEOLOGIC
COLUMN OF NO 2 DISPOSAL WELL

R.N.J.

12-74